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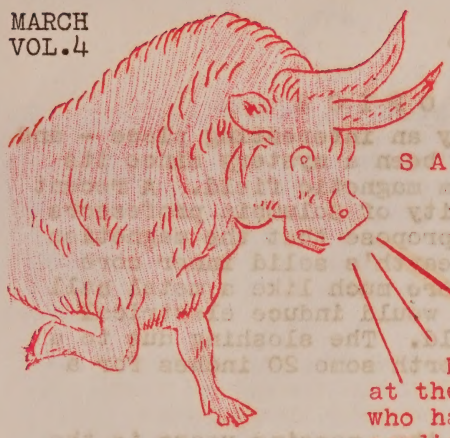

SAN ANTONIO RADIO CLUB

President - Ivan Mangold WA5RNV
Vice President - Bill Ross K5LLK
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Meets first and third Fridays at 7:30 p.m. at the Red Cross Building, 90 Brees St. All who have an INTEREST in amateur radio are cordially invited to attend.

Bull-etin Editor, Dean Davis W5BGE Typist, Maybelle Davis, XYL

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The PREZ SEZ

By IVAN WA5RNV

The flu bug has got me, don't know if it's the Hong Kong, London, or just plain Texas variety. First time in over ten years. Just when I thought I had the secret remedy, up jumps the devil.

Thanks to all who volunteered and helped Roy W5EYB and Hazel fold and stuff more than five thousand announcements of the up coming West Gulf ARRL Convention being held on April 27, 28, 29 in Euless, Texas. Be sure and read our West Gulf Director's bulletin included in the mailing--a lot of current, up to the minute information is enclosed therein.

Again I ask the "Old Timers" to help make our guests and new members feel welcome. Won't you make a special effort to get acquainted with at least ONE new person each meeting. As of March 2 SARC has 152 paid members. 73, IVAN WA5RNV.

MARCH 16 - DX NIGHT. Have you ever wondered how to snag the rare ones? It just so happens that San Antonio has a few of the Big Guns of the DX fraternity. On this night, some of these fellows will give some pointers on how they go about getting those QSL's from foreign lands. Practices, courtesies, as well as how to coax that that important QSL out of your contact "after the fact" will be demonstrated. This is one night you shouldn't miss.73, Bill K5LLK.

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CHALLENGE

By Bill Ross K5LLK.

A few weeks ago I was reading history of early amateur radio in 1930 ARRL handbook. This is a very nostalgic experience for one who cares for amateur radio. It makes you appreciate what we have today when you realize the trials and tribulations of our undaunted forebearers. The beginnings were chaotic as there were no regulations to bring about control. Frequency allocations were the first controls initiated and controls brought challenge. Challenge resulted in discoveries about "short waves" that may have gone for many years unknown.

Power limitations brought about the constant and still continuing evolvement of the antennae to the present day radiators. The limitations of the Technician license resulted in use of VHF frequencies unthought of ten short years ago by most amateurs. The point is that we can call something one thing when it really is something else. Many times what we consider a limitation is in fact a challenge. A limitation discourages growth--challenge encourages it.

The FCC recently published rules for the use of repeaters. Such rules are not unprecedented. There are rules for phone operation, CW operation, RTTY operation as well as SSTV and others. If we view these rules as limitations we may find ourselves falling into sloppy practices and techniques we accuse other services of. If we look at them as a challenge we will probably improve the operation of repeaters. I cannot and do not believe that FCC ever intended to destroy effective use for repeaters. Think about it--I believe that you will see it. If the challenge is too much for you then perhaps you don't stand up to the ones before you that have shaped amateur radio to what it is today.

73, Bill Ross K5LLK

TECHNICAL TOPICS

By W5LFM Cal Graf

This world of ours is certainly an interesting place - and so is the earth, But what has been a mystery since its creation is why the earth has a magnetic field. A recent theory advanced by two University of Columbia professors is rather earthshaking. They propose that the magnetism is generated because earthquakes make the earth's solid inner core slosh back and forth in the liquid outer core much like a metal ball in a sphere of molton iron. This movement would induce electrical currents that maintain the geomagnetic field. The sloshing due to a major quake would move the core back and forth some 20 inches for a continuing period of about 10,000 years.

A calculator that would help keep track of the passing years is the HP-80, which is the Hewlett-Packard version of the HP-35 (the engineer's sliderule),but this one is for the businessman or banker. The HP-80 18,000 bits of information kept in storage can be used to pick dates from the calendar, A 200 year calendar is kept in storage and by simply pressing appropriate keys, the user can quickly determine the number of days between any two dates from January 1, 1900 to December 31, 2099 AD. The user can enter specific dates and number of days to determine a past or future date. It might be of good use to some of our forgetful club members who forget that we meet on the first and third Friday of the month. There must be some DX involved because the HP-80 uses inverse Polish notation. The unit has a dynamic range of 10 to the minus 99 to 10 to plus 99, (for those who itemize deductions on the Form 1040!). They are on sale the whole year for only $395 each.

The Texas Instruments electronic calculator Model TI-2500 uses a MOS/LSI (metal oxide semiconductor/large seale integration) integrated circuit chip which is one-fourth inch square by one-eighth thick to perform all its calculations. This one chip replaces 6000 transistors along with their resistors and diodes.

December 1972 came and went without too many of us remembering that it was the 25th anniversary of an invention which has affected everyone's life--the transistor. Then, there was just one transistor in the world. Now there are 6000 on a single chip. The Dick Tracy wrist TV and radio is almost upon us and yet all we say is, "Yeah, I know about that." But the whole progress of man in the last half century is fantastic.

A radio amateur, because of his unique, scientific hobby, better understands technology progress when it comes along. He's lived through the period of winding his own transformers, Mother's Oats, and exploring frequencies the commercials didn't want. But he appreciates progress when he sees it. As time has gone on, and equipment and components become more specialized, the ham has had to adapt to what was available to him. He is now essentially an assembler of components rather than a builder of components. He has become more system oriented in the sense that he builds an FM repeater system, not just an FM receiver or transmitter. He becomes interested in telephone dialing, and touch tone, and handi-talkies, and ignition suppression. And that is what makes our hobby so interesting--it is dynamic and right at the tip of technology.

For those with pocket calculators, place them close to the receiver input transmission line and see how well you can hear them radiate. Many of them have a digital clock running at about 140 to 200 khz or so, and they come out with bloop-bleep tones each time you press a key or make a computation. The display appears to be the device which does most of the radiating. However, my pocket calculator has to be different and it puts out broadband white noise from the broadcast band all the way to six meters! And my piezoelectric cigar lighter puts out a spark each time it lights in spite of what the surgeon general has said about cigarettes. Maybe it had better give up butane!

In the event you are interested in time travel, you might want to know that you can buy a quartz crystal clock which goes with the 1973 Chrysler for under $60. The unit is ordered from Detroit and could be kept in the house and operated off two F cells in series (12 VDC) for about a year. Inside a temperature controlled house, the auto clock with digital rotary numbers should be able to keep time to within several seconds a month. Impress your friends over the air with ten minute precision station ident. Regards, Cal Graf, W5LFM.

CLAY COMMENTS

SIGNAL STRENGTH AND YOUR S-METER READINGS

By W5ZPV Clay Laster

The S-meter in the amateur receiver is used (or misused) to obtain relative signal strength readings of incoming signals. Many variables come into play in the determination of the signal strength readings. However, with proper use, the S-meter can be a valuable tool in the ham shack both to your operations and to the fellow ham on the other end of the circuit.

Most S-meters are adjusted to provide an S-9 reading when the input RF signal is 100 microvolts. However, it is to be noted that this calibration is valid for only the one frequency that the receiver is adjusted to during the calibration. Thus, the receiver is not calibrated for all frequencies or bands. Other variables such as antenna gain, transmission line loss, etc., add to the confusion of obtaining an accurate S-meter reading. Also, the type of signal is to be considered. Amplitude modulation will produce the most consistent readings while single sideband causes the S-meter to try to read on the peaks.

The reporting of S-meter readings sometimes leaves something to be desired. What does 60 db over S-9 really mean? To illustrate this let us look at a table of signal levels based on the standard of 100 microvolts signal level corresponding to the S-9 level:

DB Above S-9	Voltage Ratio	Signal Level
10	3.16	316 microvolts
20	10.0	1 millivolt
40	100.0	10 millivolts
60	1000.0	100 millivolts

From the above table it is evident that S-meter signal reports of 40 db over S-9 indicates a terrific signal. This indicated signal level shows that 10,000 microvolts is present at the input of the receiver! This implies a very high antenna gain, a high transmitter power output, and very little propagation loss.

If the S-meter readings aren't very accurate, what real purpose can they serve the amateur? The answer is that they provide an excellent indicator of relative signal strengths. This is most helpful in assisting a fellow ham in adjusting his antenna system or transmitter. Otherwise, the time honored R-S-T signal quality reporting method will provide a more meaningful way to inform the distant ham how his signal is arriving at your location.

One last note. The use of the S-meter in your receiver normally requires that the RF gain control be set to the maximum position. This causes strong adjacent signals to activate the receiver's AGC circuit and overloads the front end or RF stages. A better approach is to back off on the RF gain control and advance the audio control for the proper listening level. "Try it, you'll like it!"

73, Clay W5ZPV.

(Ed.Note: We welcome Clay to the Staff as a contributing writer. In the next issue of the Bull-etin he has promised an article on how to assemble a WWV converter with a minimum of effort!)

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The 7290 Traffic Net will hold its annual picnic again this year at Bastrop State Park, May 4, 5, and 6. For additional details check into 7290 Tfc Net or contact Bill W5HWY. Victoria.

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MIDLAND SWAPFEST

The Midland Amateur Radio Club Swapfest will be held March 17 & 18 at Midland, Texas. The Ramada Inn and Regal 8 will be used.The Swapfest will be at Midland County Exhibit Bldg. Registration is $2. For further info write P.O.Box 967, Midland, Texas, 79701.

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FLASH FLASH

W5LFW, Cal Graf, has an article in ELECTRONICS MAGAZINE of 15 March 73 titled "The Light Emitting Diode as a Zero Beat Detector".

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SILENT KEY - Jack Smalley WB5ERQ, a SARC member, while working at an ice house, was killed by assaliants in a robbery attempt on Feb. 13.

ARRL CONVENTION

WEST GULF DIVISION APRIL 27, 28, 29, 1973

The 41st West Gulf Division ARRL Convention is staged and set to go for the last weekend in April. Headquarters hotel is the Western Hills Inn in Euless, Texas, between Dallas and Ft. Worth. Outstanding programs sure to interest radio amateurs of all ages have been planned. ALL AMATEURS are invited and welcome.

HARRY J. DANNALS of Dix Hills, New York, will be keynote speaker at the Saturday evening banquet in the ballroom of Western Hills Inn. Dannals holds amateur call W2TUK. A senior engineer at Sperry Rand, Dannals has long been a volunteer official of ARRL, holding posts as SCM, New York City, Vice Director and later Director of Hudson Division until January '73 when he was elected president of ARRL.

ARRL FORUM: George Hart, manager of the ARRL Communications Sector, will lead off the ARRL Forum, an interesting part of the convention program. This is the ideal time for you to "pick the brain" of a League official and for you to find out what's happening in Newington these days. Roy Albright, W5EYB, ARRL Director for the West Gulf Division will be moderator for the Forum.

SPECIAL RATES: Pre-registration is possible until April 1st, and since the convention site is in the heart of Texas Vacationland (Six Flags Over Texas, Seven Seas, and Lion Country Safari), attendees are urged to pre-register early in order to be assured of lodging in the host inn. The facilities of Western Hills Inn will be turned over completely to amateur radio for April 27-29 weekend. Overflow will be routed to close-by motels at comparable rates. SPECIAL ROOM RATES have been obtained for amateurs and their families if they pre-registered with the convention. A special rate of only $12.65 per night, either single or double occupancy, is available for pre-registered amateurs. $15.45 per night will be charged if you are not pre-registered. One night's lodging in advance is required to hold confirmed reservations.

REGISTRATION FEE: Pre-registration is $3 per person from now until April 1st. Registration at the door is $3.50 per person.

SPECIAL PRIZE: To encourage pre-registration a special prize will be given away during the Saturday evening banquet for those who have pre-registered prior to April 1st deadline.

SWAPFEST: The facilities chairman has vowed to have one of the best swapfests ever. Plenty of tables have been set aside for swappers to show their wares. So-o-o gather up your junk and bring it along.

INITIATION: A special treat is to be held during the Saturday night dance. You'll not want to miss the midnight initiation ceremonies of the "Royal Order of the Wouff-Hong", the time honored exclusive amateur radio fraternity.

PRIZES GALORE: Since this convention is being sponsored by a committee of interested amateurs in conjunction with area amateur radio clubs, it is not designed to be a profit-making venture. So the purse strings have been given wholeheatedly to the prize committee to establish a corner on the prize market.

WESTERN HILLS INN LOCATION: The Inn is located between Dallas and Ft. Worth at intersection of state highway 183 and 157 in Euless, Tx.

TALK-IN FREQUENCIES: 3.925khz, 146.94/94, 94/94, 22/82 and 146.52.

TICKETS: For various luncheons, banquets, dance and breakfasts, tickets will be available separately (not included in registration fee.)

MOTEL RESERVATIONS: Write Western Hills Inn, 1102 W.Euless Blvd., Euless, Tx., 76039. Give dates and time of arrival, accomodation desired (sing., doub., or twin), names, address and call letters of each person. Include $12.65 deposit. Indicate for West Gulf Convention.

TO PRE-REGISTER: Send $3 per person, giving name, call letters and address of each, to Ted Heithecker W5EJ, Gen. Chairman, P.O.Box 47382, Dallas, Tex., 75247. You're gonna do it, so DO IT N O W !!

ARRL ARRL COMMENTS AND NEWS FROM THE DIRECTOR ARRL ARRL

The following is a directory just received from ARRL Headquarters:

TO ALL DIRECTORS:

At least one repeater license has been issued under the new rules--WR9AAA, in Joliet, Ill. Others appear imminent.

As Hq. liaison for the VHF Repeater Advisory Committee Lew McCoy, W1ICP, spent a day last week with FCC staff personnel to examine a number of practical aspects of the rules and how they are being applied and interpreted. The following is a summary of the major points discussed.

1) Section 97.108 (4) says, "Provisions must be incorporated to automatically limit transmission to a period of no more than three minutes in the event of malfunction of the control link."

FCC now interprets this to mean that one can use redundant timers on the transmitter to provide positive shut down of the repeater transmitter. In other words, most repeaters operate with a 3-minute timer IDer which will recycle when someone times out the repeater. This particular timer could be changed to a two-minute, thirty-second timer and still perform in the fashion already described. A second timer, 3 minutes duration, would be in series with the first timer. If for some reason the repeater locked on, then the second three-minute timer would shut down the repeater and the timer would have to be recycled manually (by radio remote or telephone line). This is somewhat easier than having the control station send a repetitive pulse or some other signal via the control link up to the repeater.

2) FCC still stands firm on monitoring both the input and output of repeater before turning the transmitter on. However, this has been simplified to some extent. One needs only a receiver on the transmitter output frequency. Listen on the receiver, and if there is no activity on the channel, the transmitter can be turned on. The existing repeater input receiver is adequate for monitoring the input.

FCC will accept a receiver on the output frequency with a COR (carrier operated relay) on the receiver, so if there is activity on the output frequency, the receiver would keep the transmitter from coming on. This method would mean that a down-link transmitter would not be required. How "tight" the COR would be set would depend on each installation, how near other repeaters on the same frequency happen to be, ambient noise, and so forth.

FCC will also accept down-link monitoring, and monitoring via telephone, assuming one had wire control (telephone line, private line, unlisted number). Actually, there are several possibilities here.

3) Some of you may recall that FCC said that use of standard dial tones used to control a repeater was not good amateur practice. The question was asked, "While FCC says this, would they accept an application that used this method?" The answer was a positive yes.

4) Antenna patterns. On the vertical pattern problem, there are several possible answers. The WR9AAA group took their antenna from its mount, turned it over so that it was horizontal, about three wave-lengths above ground, and fed it with a signal generator. They mounted a field-strength meter, calibrated in decibels, about 600 feet away and then rotated the antenna five degrees at a step. The field strength readings were recorded and this information was converted to a polar plot showing the vertical pattern. This method was accepted by FCC.

Additionally, FCC will accept the mathematical derivation of the vertical pattern. For that purpose, April QST is carrying an article by Tony Dorbuck, W1YNC, of our Technical Staff, on how to do this. The article simplifies the formulas for pattern derivations used by Dr. Kraus, W8JK, in his widely-accepted text book, "Antennas."

Several repeater applicants are showing only a simple halfwave

vertical dipole. The vertical and horizontal patterns are the standard "text book" type, a "figure eight" for the vertical pattern and a "circle" for the horizontal. Because the standard reference antenna used by the amateur division of FCC is a half-wave dipole (zero dB gain) there is no valid reason for FCC not to accept such patterns.

Prose Walker has written several antenna manufacturers spelling out what is required for filing with the Commission of various parameters of their products, so that in the future applicants for repeater licenses can make reference to such material (assuming approval). Meanwhile, many applicants are installing the simple half-wave dipoles in order not to be delayed by this approval process.

5) HAAT maps. FCC will now accept that portion of the map which covers the 10-mile required area around the repeater site. In other words, one doesn't have to send in the entire map--only that portion showing the required eight radials and 40 check points used to determine HAAT. The border containing the legend should also be included.

6) As indicated in a March QST news item, FCC will accept a system of private line telephone control. The system shown there is a basic method. Telephone companies in the Bell system have different requirements as to exactly what can be attached to their lines. It is important that the line is not unbalanced by any device that is used. There are many methods of using the lines without any danger of unbalance--acoustic coupling, LED coupling, and so forth. The important point is that FCC will accept such systems.

7) FCC emphasized time and again that the applicant should keep his application simple and don't "overfile." In other words, liberal rather than literal interpretations of the rules have eased the burden. Incidentally, one of the difficulties FCC is having is that there is no standard terminology in the repeater field. (One application actually used a "kerchunk" circuit--whatever that is.) If one has any doubts about terminology, he should explain in simple langauge what the term means.

While there is no official statement to that effect, we understand that as long as applications for repeater licenses are filed by April 30th, if the workload is such that processing is not completed by the June 30 deadline, there will be some provision for taking care of the problem.

Sincerely yours, JOHN HUNTOON, W1RW, General Manager."

On Sat. 10 March, I am to attend a meeting of our new International Affairs Committee in Washington, D. C. At this meeting we hope to define our objectives and develop a basic plan for coordinating amateur radio efforts world wide, for the purpose of preserving our present frequencies, and perhaps obtain more space in the frequency spectrum. Needless to say, the task is formidable. The work of this committee can have a great influence on the future of amateur radio. I hope we can rise to the task.

73, ROY L. ALBRIGHT, W5EYB, DIRECTOR, WEST GULF DIVISION, ARRL.

- 5-March 1973.- - - - - - - -

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